

Please make the following amendments to the specification of published US Patent Application 2004/0231941 A1 by replacement paragraph. Deletions are indicated by double square brackets while additions are shown by underlining the added text.

Please amend paragraph [0006] line 9 to amend a typographical error in the originally filed specification:

[0006] It is a further object of the invention to provide a luggage case shell that comprises a substantially peripheral injection molded frame, this frame having upstanding sides to form the walls of the shell, and the base of the shell consisting of a panel made of textiles or a textile and foam laminate, such that an edge of the panel is autogenously adhered to the surrounding peripheral frame. By the term autogenously, it is meant that the bond is formed by the materials in the panel already [[and]] in the injection molding process without the necessity of adding adhesives or fasteners.

To reflect the reference numerals shown in Figure 3 as originally filed, please amend the following paragraph [0017], line 18, as follows. Please also amend lines 19 and 20 to correct typographical errors in the originally filed specification.

[0017] Referring to the figures, a luggage case 1 includes a shell that constitutes the outer construction of the luggage case. The shell 2 has a generally broad face 3, the broad face is formed of a membrane or panel 4 which could be a thin flexible polymer sheet, or even a single web of textile fabric, but most preferably is a fabric and foam laminate as will be detailed below. The single web of textile fabric could be the ribbon or edge of a slide fastener or "zipper" track to which could be fastened, via a mating zipper, a completed fabric textile panel or the like. Surrounding the panel 4 is an injection molded frame 5 that surrounds substantially the entire periphery of the flexible

membrane. The frame 5 and mating frame 5' include overlapping edges which form a clamshell type closure (FIG. 3) using known tongue and groove complementary edge shapes. The case further includes console member 9 which carries at least one carry handle 6 and a pair of latches 7 for selectively holding the frames 5 and [[6]] 5' together to contain a traveler's belongings. The case [[included]] includes a hinge device 8 of hinge knuckles integrally molded with the respecting [[frames]] frame's known type. At the juncture of each frame and panel there is an autogenously formed bond 10 between the frame and the fabric membrane.

Please amend the following paragraph to reflect the initially as-filed figure 7.

[0026] FIG. 7 shows further alternative attachment of the panel to the peripheral injection molded frame. This process still uses the thick section to position the textile edge against one side of the injection mold. Here however the textile is positioned against that portion of the mold forming the outer surface of the injection molded frame rather than the inner surface of the injection molded frame. This configuration is less desirable in that the cut edge of the panel, while buried within or at least firmly adhered in the mass of injection molded plastic, is more exposed to snagging or the other rigors of travel than that illustrated in FIGS. 5A and B and FIG. 6. Note that FIG. 7 shows that the thick section includes a cavity [[34]] 50. This illustrates the possibility of using gas injection, a widely used and common expedient for reducing the amount of molten plastic that remains in thick sections of injection molded parts. It should be understood, however, that the use of gas injection is not necessary to obtain the superior panel edge portion positioning central to a preferred execution of this invention.

Please amend the following paragraph as indicated to reflect the drawings.

[0027] FIG. 8a shows a section through an edge portion of the injection mold, in particular at the location where the badge 17 would be placed in the final assembly of the case 1. Note the mold cavity formed between the mold halves provides a thin web portion 35 which constitutes most of the injection molded frame, and the thick section forming cavity 30 at the inner edge of the frame forming mold. All but the J portion of the panel remains free of the injection mold. The collapsed foam panel in this area forms a seal between the adjacent lips 36 of the closed mold halves. Plastic material is preferably injected into a point along this peripheral cavity 30 via channel [[32]] 35. Note that the exit of this channel is directly opposite the J portion 23. It has been found that molten thermoplastic led into this thick section tends to fill the thick section around the periphery faster than it fills the thin web portion. Figure [[b]] 8b includes a series of contour lines. These contour lines schematically represent the front or leading wave 40 of molten thermoplastic in various times T1 through T4 during the injection molding process. T1 shows that at a particular point in time at any particular distance away from the injection molding point. Note that a relatively small portion the web is filled with plastic. However, because of the reduced back pressure presented by the thick portion a greater amount of the thick section is rapidly filled with plastic.

Please amend the specification as follows to correct spelling errors:

[0009] The luggage made thereby is relatively light and amazingly strong for the amount of material used in its construction, partially as the result of the strong autogenous bond between the periphery of the panel and the injection molded frame. The cost of such an injection molded frame and panel combination is remarkably low, given the material and processing savings that result directly from the [[autogenesis]] autogenous bond.

[0029] There are many additional benefits that derive from the luggage construction in method illustrated above. Benefits of weight reduction, cost reduction due to simplified process steps and

increased strength due to the intimate and continuous [[autogenesis]] autogenous bond between the panel and the injection molded frame have already been discussed. In addition to these benefits over all prior constructions, the simplified construction and cost benefits of mass producing luggage by injection molding are well known. However, the construction of this invention reduces the internal mold pressures normally associated with the relatively large single piece injection molded shells of the typical luggage case. Secondly, the disclosed process permits the use of other injection moldable materials that would normally not be considered for use in making luggage cases. For example, a more viscous injection molding material such as one that would be filled with a strength enhancing material such as chopped fiber glass, nylon or more sophisticated engineering materials such as carbon and boron fibers could be used to form the frame. This is so since it would not be necessary for such flow resisting materials to flow into the panel portion of the case. Clearly, the panel portion of the case has already been provided by the flexible panel. While the preferred embodiment uses molten thermoplastic material, a reaction injection molding (RIM) material could be injected into the injection mold. The benefits of the thick section would apply equally well to such materials as it would in the illustrated process.

Please amend the specification as follows to include reference numeral 24 as shown in the originally-filed Figure 5a or 5b:

[0021] A most preferred construction consists of providing the stiffened edge portion of the panel with a distinctive roll or curl 23 (FIG. 5) shown in cross section as having the shape of a "J." In more detail, this edge portion includes a first outwardly projecting lip 24 followed by a gently curving tail portion 25 which terminates at the raw or cut edge 16. In contrast with the pin positioning method illustrated in FIG. 4, this panel edge portion is purposefully positioned against one of the inner surface 26 (in this case the inner frame defining walls) of the injection mold. Adjacent to this "J"

portion the mold walls form an enlarged peripheral cavity 30 which inevitably forms a thicker edge section 31 of the frame. The mold portion 20' could preferably be in the form of a collapsing core. For certain shell shapes, such a collapsing core may be desirable to accommodate removing that portion of the mold from within the finished shell once the plastic material has hardened adequately. This is especially applicable for the larger sizes of finished luggage where it might be expedient to include an inwardly projecting rim to stiffen the outermost edge of such a larger shell. Collapsing core molds are a known expedient for molding complex shapes. Such techniques do not directly related to the inventive concept set forth herein.

Please amend the following paragraph, lines 5 and 7, to correct the double usage of reference numerals 11, 12, and 13. The newly appointed reference numerals will be reflected in the amended figures:

[0019] The joint or bond between the panel and the injection molded frame is shown in cross section in FIG. 3. The flexible panel preferably is made of a combination of materials. This combination of materials comprises of a generally flat sheet of cross linked polyethylene foam [[11]] 18 to which is bonded one or more layers of decorative and strength enhancing fabric [[12, 13]] 19, 29 preferably a woven textile. Such a material is well known in the art and the form could be made by silane crossed linked polyethylene in accordance with for example U.S. Pat. No. 4,591,606, which patent, to the extent it is consistent with this description, is hereby incorporated by reference. The material can have the same characteristics and alternative covering textiles as recited in the previously mentioned patents assigned to Superior S.A. Suffice it to say that the flexible panel membrane or textile and foam laminate would be best preformed into a general dome shaped or decorative configuration by known heat and pressure forming processes. The thus formed panel retains its general molded shape. The edge portions of the panel especially, if it is made of a foam and textile laminate, can be pinched to crushed to form a relatively stiff thin edge portion 14 as

shown in FIG. 3. This edge portion can be positioned to project into the injection mold cavity in a known manner and the cavity is filled with molten thermal plastic material, such as polyethylene, polypropylene and variations of these olefinic thermoplastics such as TPOs (thermal plastic olefins) or TPEs (thermal plastic elastomers). In any event, the peripheral frame provides a stiffening portion to stabilize the generally flexible nature of the panel and provide the beam strength necessary, especially along the side walls, to permit a fairly secure clamshell closure as set forth above. The panel in turn provides a tensile member or web between the adjacent and opposite walls of the frame lending its relatively high tensile strength (in comparison to its weight) to the overall construction. Unlike conventional one-piece injection molded shells, the panel also permits including a slide fastener 15 accessible opening or pocket for extra versatility. The fastener is easily attached to the panel using conventional sewing techniques, preferably prior to molding the frame to the peripheral edge of the panel. Of course one could apply other access and organizing features normally found in conventional soft textile constructed cases to the panel. Such features include one or more textile pockets sewn to the inside and outside surfaces of the panel. Such a feature laden panel could have a surrounding zipper track (not shown) for attaching to a zipper track bonded to the frame as suggested above. In this way, one could construct a fairly complex and feature laden panel, but only risk the incremental cost of the bonded zipper track, rather than the entire panel, if the molding process were to go wrong. A plate 17 or the like for displaying a company logo is conveniently located on the frame close on or adjacent to the joint 10. This serves the additional function of covering the mark made by the injection gate for the thermoplastic resin to form the shell. This will be detailed below.